REMARKS

In the June 13, 2005 Office Action, claim 7 is rejected under 35 U.S.C. 112, second paragraph, claims 1-3, 7-13 and 17-23 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 6,311,786 to Giardino et al., and claims 4-6, 14-16 and 24-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Giardino et al.

By the present invention, claims 1, 7, 11 and 21 are amended, leaving claims 1-26 pending in the application with claims 1, 11 and 21 being independent. Independent claims 1, 11 and 21 are amended to clarify that the step of fitting or selecting an equation that approximates the signal includes selecting one mathematical expression from a set of mathematical expressions.

Applicants respectfully traverse the rejections over Giardino et al. because Giardino et al. fails to disclose, teach or suggest the step of fitting an equation that approximates a signal by selecting a mathematical expression from a set of mathematical expressions. Each rejection is addressed in detail below.

Claim Rejections 35 U.S.C. 112, second paragraph

Claim 7 stands rejected under 35 U.S.C. 112, second paragraph for lack of antecedent basis for the step of converting a signal into an equation. Claim 7 is amended consistent with the amendment to independent claim 1 and to eliminate the recitation of converting a signal into an equation. Therefore, Applicants believe claim 7, as amended, is definite and request withdrawal of the rejection under 35 U.S.C. 112, second paragraph.

Claim Rejections 35 U.S.C. 102(b)

Claims 1-3, 7-13 and 17-23 stand rejected under 35 U.S.C. 102(b) as allegedly being anticipated by U.S. Patent No. 6,311,786 to Giardino et al. However, Giardino et al. fails to

disclose, teach or suggest determining torque including the step of "fitting" an equation that approximates the signal that represents the time-amplitude waveform of the torque impulse by selecting a mathematical expression from a set of mathematical expressions. Instead, Giardino et al. teaches using the same predetermined equation (col. 4, line 11) when determining torque and not one selected from a group of equations.

Independent claim 1 recites the step of fitting an equation that approximates the time-amplitude waveform of the torque impulse when determining torque. "Fitting an equation" is a term of art that means to fit data to plural equations and selecting the equation from that group of equations having the desired result. Claim 1 is amended to clarify the definition of "fitting an equation," that is selecting one mathematical expression from a set of mathematical expressions. Similar language is added to independent claims 11 and 21.

As described in Applicants' specification at page 10, lines 17-20 and page 11, line 19 – page 14, line 13, the equation used in the claimed invention is selected from a number of possible equations or mathematical expressions using a curve fitting function to determine the most appropriate expression. That is, the impact tool controller must first fit the data to a number of different equations to find the best one that approximates the specific pulse waveform detected for the threaded joint before the controller can determine the torque. The equation fitting process is done in real time, i.e., until the pulse waveform data are collected and the equation fitting process is complete, the actual equation to be used for calculating torque is unknown. This approach takes a number of different fastening process parameters into account (page 11, line 21 – page 12, line 4) to arrive at a more complete conclusion about the pulse waveform. This takes into account that there are variations between fasteners and their tightness after assembly.

In contrast, Giardino et al. teaches using the same pre-determined equation (col. 4, line 11) for calculating torque. More specifically, the equation used is the impact pulse I

defined as the integral of the pulse waveform, as described in col. 3, lines 60-63 and col. 4, lines 7-19. Thus, torque is always determined by the formula T-(Ir)/dt (col. 4, line 40) and impulse I is always calculated as $I = \int Fdt$ (col. 4, line 11). In other words, the equation taught by Giardino et al. for the impulse I is not selected from set of mathematical expressions, as recited in the claimed invention, because the same equation for determining impulse I is always used, and thus there is no set of mathematical expressions. Thus, Giardino et al. assumes that all of the information required to accurately determine torque is contained within an single equation, that is the integral of the pulse waveform, and does not account for variations in fastener tightness, distortion in the torque to magnetic field or magnetic field to electrical signal.

Anticipation requires that every limitation of a claim must identically appear in a prior art reference. See *Gechter v. Davidson*, 43 U.S.P.Q. 2d 1030, 1032 (Fed. Cir. 1997). It is clear that the limitation of a fitting an equation by selecting a mathematical expression from a set of mathematical expressions does not identically appear in Giardino et al. Absence from the prior art reference of any claimed element negates anticipation. See *Rowe v. Dror*, 42 U.S.P.Q.2d 1550, 1553 (Fed. Cir. 1997).

Therefore, in view of the above, Applicants request reconsideration and withdrawal of the rejection under 35 U.S.C. 102(b), and allowance of independent claims 1, 11 and 21.

Dependent claims 2-10, 12-20 and 22-26 are also believed allowable for the same reasons as discussed above. Moreover, these claims recite additional features not found in Giardino et al. For example, claims 2 and 12 recite that the equation/mathematical expression includes a parameter selected from a list of parameters. The passage in Giardino et al. (col. 4, lines 20-25) cited in the Office Action merely references t_f and discloses buffering data so that data points immediately before and after the impulse I are captured, and does not relate to the parameters recited in the claims.

Claim Rejection 35 U.S.C. 103(a)

Claims 4-6, 14-16 and 24-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Giardino et al. As discussed above, Giardino et al. fails to disclose, teach or suggest all of the limitations of independent claims 1, 11 and 21. Therefore, dependent claims 4-6, 14-16 and 24-26 are allowable for the same reasons. Moreover, these claims recite additional features not found in Giardino et al. For example, claims 4, 5, 14, 15, and 25 recite specific equations not found in Giardino et al. Moreover, the Office Action provided no motivation to modify Giardino et al. to use the equations of claims 4, 5, 14, 15, and 25 as required to establish a prima facie case of obviousness.

Accordingly, Applicants request reconsideration and withdrawal of the rejection under 35 U.S.C. 103(a) and the allowance of claims 4-6, 14-16 and 24-26.

In view of the foregoing, Applicant's believe the application is in condition for allowance. Prompt and favorable action is therefore respectfully solicited.

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